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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WANG, LEMING	

ART UNIT	PAPER NUMBER
2638	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/049,613	KATAYAMA, MASATOSHI
	Examiner	Art Unit
	Leming Wang	2638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *21 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-4 and 7-9 have been considered, but are moot in view of new rejection ground(s).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by *Kunikane et al.* (US Patent No: 5,479,547).

Regarding claim 1, *Kunikane et al.* teach that a data transmission system (Col.1, lines 7-10) including subscriber units (2, Fig.15) configured to interconnect with and a central office unit (1, Fig.15) via optical fibers (3, Fig.15), the central office unit is configured to multiplex a video signal (Col.1, lines 50-51) with signals other than the video signal (Col.1, line 45) to deliver them to the subscriber units (Subscriber units, 2, Fig.15), wherein each subscriber unit is configured to demultiplex (5, Fig.15) a received signal, said subscriber units comprising a wavelength division multiplexer / demultiplexer (5, Fig.15) configured to eliminate a particular wavelength signal (Col.2,

lines 44-50, note that as a mux/demux of *Kunikane et al.* is used to replace the device WDM of 5, Fig.15, a particular wavelength λ_1 is transmitted and another particular wavelength λ_2 is reflected, inherently, it is also true that when λ_1 and λ_2 are input into the same fiber 27 of Fig.1, wavelength λ_1 is transmitted through film 26 of Fig.1 to reach detector PD of Fig.1, and λ_2 is reflected to free space by film 26 of Fig.1. Please see other related references, for example, US Patents 5,799,120, Fig.2, or 5,764,825, Fig.7)

Regarding claims 2 - 4, *Kunikane et al.* teach a wavelength division multiplexer / demultiplexer having a is configured to reflect the particular wavelength signal to reject its input, a wavelength division multiplexer / demultiplexer comprises a reflecting layer (26, Fig.3) configured to reflect the particular wavelength signal at an input end surface of an optical fiber of the subscriber unit, a wavelength division multiplexer / demultiplexer consists of a dielectric multilayer filter (Col.2, lines 49-50, Col.4, lines 47-48).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 5 is rejected under U.S.C. 103(a) as being unpatentable over *Kunikane et al.* (US Patent No: 5,479,547) in view of *Rivoallan* (US Patent No: 6,130,974)

Regarding claim 5, the communication system of *Kunikane et al.* differs from the claimed invention in that *Kunikane et al.* do not teach an optical fiber with a core and a cladding that covers an external surface of the core, and that has multiple notches formed on the cladding to reflect the particular wavelength signal.

However, *Rivoallan* from the same field of endeavor teaches an optical fiber with a core (12, Fig.1) and a cladding that covers an external surface of the core (11, Fig.1), and that has multiple notches formed on the cladding (D_{max} and D_{min} , Fig.1) to reflect the particular wavelength signal (1530nm, Fig.7A and B). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate a multi-notched fiber, such as the one taught by *Rivoallan*, for the fiber in the optical communication system of *Kunikane et al.* in order to greatly improve the efficiency to cut off a wavelength in addition to reflection by diffracting it away during transmission along the fiber.

6. Claim 6 is objected is rejected under U.S.C. 103(a) as being unpatentable over *Kunikane et al.* (US Patent No: 5,479,547) in view of *Ellison et al.* (US Patent No: 6,556,757).

Regarding claim 6, the communication system of *Kunikane et al.* differs from the claimed invention in that *Kunikane et al.* do not teach the wavelength division multiplexer/demultiplexer comprises an optical waveguide that is made of a polymer and absorbs a signal with a wavelength of 1650 nm, which is employed as the particular wavelength signal.

However, *Ellison et al.* from the same field of endeavor teach an optical fiber made of a polymer (Col.2, line 26) and absorbs a signal with a wavelength of 1650 nm, which is employed as the particular wavelength (absorption about 1db per meter at 1650nm, Fig.7). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate a fiber, such as the one of *Ellison et al.,* for the fiber in the subscriber transmission system of *Kunikane et al.* to obtain a further effective attenuation of a wavelength by absorbing it when it propagates in the core and polymeric cladding layers of the fiber in addition to diffracting and reflecting it.

7. Claims 7 and 8 are rejected under U.S.C. 103(a) as being unpatentable over *Kunikane et al.* (US Patent No: 5,479,547) in view of *Feldman et al.* (US Patent No: 6,577,414).

Regarding claim 7, *Kunikane et al.* teach that a data transmission system (Fig.15) including subscriber units (2, Fig.15) configured to interconnect with and a central office unit (1, Fig.15) via optical fibers (3, Fig.15), the central office unit is configured to multiplex a video signal (5 in central office 1, Fig.15, Col.1, lines 50-51)

with signals other than the video signal (Col.1, line 45) to deliver them to the subscriber units (Subscriber units, 2, Fig.15), wherein each subscriber unit is configured to demultiplex (5, Fig.15) a received signal, said subscriber units comprising a wavelength division multiplexer / demultiplexer (5, Fig.15) configured to eliminate a particular wavelength signal (Col.2, lines 44-50, note that as a mux/demux of *Kunikane et al.* is used to replace the device WDM of 5, Fig.15, a particular wavelength λ_1 is transmitted and another particular wavelength λ_2 is reflected, inherently, it is also true that when λ_1 and λ_2 are input into the same fiber 27 of Fig.1, wavelength λ_1 is transmitted through film 26 of Fig.1 to reach detector PD of Fig.1, and λ_2 is reflected to free space by film 26 of Fig.1. Please see other related references, for example, US Patents 5,799,120, Fig.2, or 5,764,825, Fig.7). *Kunikane et al.* further teach central office unit comprises an optical distributor (S, Fig.15) configured to distribute the video signal and supplying it to a wavelength division multiplexer / demultiplexer.

The communication system of *Kunikane et al.* differs from the claimed invention in that *Kunikane et al.* does not teach an optical amplifier configured to amplify the video signal to be transmitted.

However, *Feldman et al.* from the same field of endeavor teach using an optical amplifier (114, 128, Fig.1) for amplifying the video signal to be transmitted. Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate an optical amplifier, such as the one of *Feldman et al.,* in the central office of the transmission system of *Kunikane et al.* in order to increase the signal strength to further increase the transmission distance.

Regarding claim 8, *Kunikane et al.* teach that a data transmission system (Fig.15) including subscriber units (2, Fig.15) configured to interconnect with and a central office unit (1, Fig.15) via optical fibers (3, Fig.15), the central office unit is configured to multiplex a video signal (Col.1, lines 50-51) with signals other than the video signal (Col.1, line 45) to deliver them to the subscriber units (Subscriber units, 2, Fig.15), wherein each subscriber unit is configured to demultiplex (5, Fig.15) a received signal, said subscriber units comprising a wavelength division multiplexer / demultiplexer (5, Fig.15) configured to eliminate a particular wavelength signal (Col.2, lines 44-50, note that as a mux/demux of *Kunikane et al.* is used to replace the device WDM of 5, Fig.15, a particular wavelength λ_1 is transmitted and another particular wavelength λ_2 is reflected, inherently, it is also true that when λ_1 and λ_2 are input into the same fiber 27 of Fig.1, wavelength λ_1 is transmitted through film 26 of Fig.1 to reach detector PD of Fig.1, and λ_2 is reflected to free space by film 26 of Fig.1. Please see other related references, for example, US Patents 5,799,120, Fig.2, or 5,764,825, Fig.7), and the central office unit comprises an optical distributor (S, Fig.15) configured to distribute the video signal and supplying it to a wavelength division multiplexer / demultiplexer.

The communication system of *Kunikane et al.* differs from the claimed invention in that *Kunikane et al.* does not teach an optical amplifier configured to amplify the video signal to be transmitted and a plurality of video signal generators.

However, *Feldman et al.* teach using a central office unit that comprises of a plurality of video signal generators for generating video signals with different

wavelengths (Col.4, lines 3-4, 5, 10; λ1, λ2, ..., λn, Fig.4), a first wavelength division multiplexer / demultiplexer (λ1, λ2, ..., λn, λ MUX, Fig.4) for multiplexing the video signals supplied from said plurality of video signal generators for demultiplexing the video signals and signals other than video signal and a second wavelength division multiplexer / demultiplexer (λ MUX after amp 437 in 126, Fig.4). *Feldman et al.* also teach an optical amplifier (128, Fig.1; 437, Fig.4) for amplifying the video signal to be transmitted in a subscriber fiber-to-the-home CATV broadcast system (180, Fig.1). Accordingly, it would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate an optical amplifier, a plurality of video signal sources with different wavelengths and two wavelength division multiplexer / demultiplexers, such as those taught by *Feldman et al.,* in the central office unit of the communication system of *Kunikane et al.* in order to enhance the video signal obtained from many video signal sources with different wavelengths multiplexed by a wavelength division multiplexer / demultiplexer together with the signal other than video signals to be sent to another demultiplexer to provide subscribers various types of signals with higher intensity.

8. Claim 9 is rejected under U.S.C. 103(a) as being unpatentable over *Kunikane et al.* (US Patent No: 5,479,547) in view of *Schmack et al.* (US Patent No: 4,481,621).

Regarding claims 9, *Kunikane et al.* teach that a data transmission system (Fig.15) including subscriber units (2, Fig.15) configured to interconnect with and a central office unit (1, Fig.15) via optical fibers (3, Fig.15), the central office unit is

configured to multiplex a video signal (Col.1, lines 50-51) with signals other than the video signal (Col.1, line 45) to deliver them to the subscriber units (Subscriber units, 2, Fig.15), and each subscriber unit is configured to demultiplex a received signal (5, Fig.15), and a second wavelength division multiplexer / demultiplexer (5, Fig.15) configured to eliminate a particular wavelength signal (Col.2, lines 44-50, note that as a mux/demux of *Kunikane et al.* is used to replace the device WDM of 5, Fig.15, a particular wavelength λ_1 is transmitted and another particular wavelength λ_2 is reflected, inherently, it is also true that when λ_1 and λ_2 are input into the same fiber 27 of Fig.1, wavelength λ_1 is transmitted through film 26 of Fig.1 to reach detector PD of Fig.1, and λ_2 is reflected to free space by film 26 of Fig.1. Please see other related references, for example, US Patents 5,799,120, Fig.2, or 5,764,825, Fig.7).

The communication system of *Kunikane et al.* differs from the claimed invention in that *Kunikane et al.* do not teach that the subscriber unit comprises a first wavelength division multiplexer / demultiplexer configured to demultiplex the video signals and signals other than video signal. However, *Schmack et al.* from the same field of endeavor teach a subscriber unit (Fig.2) comprises of a wavelength division multiplexer / demultiplexer (BB-DMUX, Fig.2) for demultiplexing the video signals and signals other than video signal (BB-DMUX, TV, ST, SB, Fig.2; Col.2, lines 65-67); and another wavelength division multiplexer / demultiplexer signals (SB-DMUX, ISDN, Fig.2). Accordingly it would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the method of using a first multiplexer / demultiplexers, such as the ones of *Schmack et al.*, with the communication system of *Kunikane et al.*

in order for the received signals to be demultiplexed in the first multiplexer/demultiplexers into the original video signals and signals other than video signal before being sent to the second wavelength division multiplexer / demultiplexer of *Kunikane et al.* to eliminate a particular wavelength in order to reduce crosstalk interference happening in between video signals and signals other than video signal.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

1. *Mugino et al.* (US patent No: 5,799,825) teach a DMUX with low through loss and low reflection loss.

2. *Kurata et al.* (US patent No: 5,799,120) teach a DMUX with half-ength of conventional one.

3. *Beierle et al.*, US patent No: 6,538,781 , is about multimedia distribution system.

4 *Bhauk et al.*, US patent No: 4,545,048, is about service integrated digital transmission system.

5. *Wong et al.*, US patent No: 6,208,444, is showing a multi-cavity Etalon demultiplexer.

6. *Pan*, US Patent No: 6,147,786, is about hybrid analog/digital access network with mini-digital optical node.

7. *Schussler*, US Patent No: 4,441,180, service integrated communication transmission and interchange system.

8. *Heidemann, et al.*, US patent No: 5,517,232, is about cable television distribution network with video-on-demand transmission.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leming Wang whose telephone number is 571 272 3030. The examiner can normally be reached on 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571 272 3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leming Wang
8/01/2005

KENNETH VANDERPUYE
PRIMARY EXAMINER